IN THE SPECIFICATION

At page 9, please replace paragraph [0028] with the following amended paragraph:

[0028] Figure 2 is a block diagram of an exemplary method 200 of determining a gap between an eddy current proximity transducer and a target that may be used with system 10 (shown in Figure 1). The method includes providing 202 a data structure that is populated with data that is relative to a gap value corresponding to a complex impedance value of the transducer. In the exemplary embodiment, a database that includes a look-up table for each respective frequency used to excite transducer 12 is provided in memory 20 of system 10. The number of different frequencies that may be used to excite transducer 12 is selectable by the user. In other embodiments, memory 120 may include a different number of look-up tables than there are selectable frequencies in system 10. In the exemplary embodiment, system 10 includes three DDS 72, each providing a discreet frequency component to transducer 12, and memory 120 includes three respective look-up tables. Transducer 12 is excited 204 at each of the three different frequencies. The frequencies are summed to provide a composite signal to transducer 12. The interaction of transducer 12 with target 30 generates signals that are sampled and transmitted to DDCs 100. In the exemplary embodiment, system 10 includes two DDCs 100, one is associated with V1, and the other is associated with V2. Each ~~DDC 72~~ DDC 100 has four channels, of which only three are used, because of the three distinct signals exciting transducer 12. The channels of DDCs 100 are programmed to receive the same frequencies that are generated by the DDSs 72. A complex impedance value of the transducer at each of the three frequencies is determined 206. The gap corresponding to each complex impedance value is determined 208 using the data structure stored in memory 120. The data structure may include one or more look-up tables and/or transfer functions that include data relating complex impedance values to gap values at a respective frequency. A particular look-up tables and/or transfer function may be selected for different procedures or when imaging different targets. The data structure data may be interpolated to facilitate increasing the accuracy of the gap determination 208. Additionally, the interpolations may be averaged to facilitate reducing the effects of noise on the final gap determination 208.

At page 10, please replace paragraph [0029] with the following amended paragraph:

[0029] Figure 3 is a graph 300 of exemplary normalized impedance traces that may be acquired using method 200 (shown in Figure 2). Graph 300 includes an x-axis 302 that illustrates increasing normalized resistance of transducer 12 from a graph origin 304. An y-axis 306 illustrates increasing normalized impedance of transducer 12 from origin 304 to y-axis extremis 308. A plurality of normalized impedance traces illustrates the impedance of transducer 12 in response to excitation at three different frequencies. A trace 310 illustrates the normalized impedance at 100kHz, a trace 312 illustrates the normalized impedance at 500kHz, and a trace 314 illustrates the normalized impedance at 1.102MHz. The normalized impedance of transducer 12 at far gap is illustrated at origin 304 and the normalized impedance of transducer 12 at near gap is illustrated at x-axis right extremis 316. Each data point on graph 300 corresponds to an impedance of transducer 12 at a particular gap and a respective excitation frequency. Each trace 310, 312, and 314 has a corresponding data structure located in memory 120 that permits an interpolation of data points to determine a corresponding gap. In the exemplary embodiment, the data structure is a look-up table. The three gaps that are determined from the look-up table may be averaged to reduce the effects of noise that may be present in system 10, cable 15, and/or transducer 12. The gap determined by noise reduction method 200 may be output textually and/or graphically via ~~display 50~~ <u>display 150</u>. The determined gap may be output electronically via output 142 and/or link 144.